

Amendment to the Claims:

This Listing of Claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1 – 58 (Cancelled)

59. (Currently Amended) An oxygenate feed vaporization and introduction system for a methanol to olefin (MTO) reactor, comprising:

an oxygenate inlet for receiving a methanol feedstock, wherein the inlet includes one or more heating devices for vaporizing the feedstock;

an oxygenate feed introduction nozzle connected by one or more lines to the inlet, the nozzle including a first generally tubular member defining a feedstock pathway, the tubular member having a first end for receiving a feedstock from the one or more heating devices, a second end protruding into or flush with an interior surface of the reactor, and an inner nozzle surface forming a conduit for delivering the feedstock from the first end to the second end, wherein at least a portion of the inner nozzle surface is formed of a commercial alloy resistant to the formation of metal catalyzed side reaction byproducts, which alloy is selected from the group consisting of 754, TD, 758, 602, 690, 276, 263, DS, 302, 803, 864, 410, 304, 316, 400, 330, 800, 600, 825, 601, 625, 617, 956, 693, and 671;

a second larger diameter cylindrical tube oriented coaxially to the feed introduction nozzle to form an outer cooling pathway around the feedstock pathway so that the feedstock can be maintained at a temperature effective to minimize or eliminate the formation of metal catalyzed side reactions, wherein the cooling pathway is closed-off at an end corresponding to the first end of the nozzle so that cooling medium can flow toward the reactor unit and exit the feed introduction nozzle within the reactor unit through a diluent outlet; and

a thermocouple implemented on a surface of the feed introduction nozzle to monitor the temperature of said surface; and

means for modifying the characteristics of the cooling medium flowing through said cooling pathway in response to temperature monitored by said thermocouple.

60 – 94. (Canceled)

95. (Currently Amended) The oxygenate feed vaporization and introduction system of claim 59, wherein the commercial alloy is selected from the group consisting of 825 and 400.

96 – 101. (Canceled)

102. (Currently Amended) The oxygenate feed vaporization and introduction system of claim 59, wherein the commercial alloy is selected from the group consisting of TD, 758, 625, 601 and 276.

103. (Currently Amended) The oxygenate feed vaporization and introduction system of claim 59, wherein the commercial alloy is selected from the group consisting of 693, 602, 690, 671, 617, 263 and 956.

104 – 108. (Cancelled).

109. (New) An oxygenate feed vaporization and introduction system for a methanol to olefin (MTO) reactor, comprising:

an oxygenate inlet for receiving a methanol feedstock, wherein the inlet includes one or more heating devices for vaporizing the feedstock;

an oxygenate feed introduction nozzle connected by one or more lines to the inlet, the nozzle including a first generally tubular member defining a feedstock pathway, the tubular member having a first end for receiving a feedstock from the one or more heating devices, a second end protruding into or flush with an interior surface of the reactor, and an inner nozzle surface forming a conduit for delivering the feedstock from the first end to the second end,

wherein at least a portion of the inner nozzle surface is formed of a material that is less catalytically active to the formation of oxygenate decomposition byproducts than carbon steel;

a second larger diameter cylindrical tube oriented coaxially to the feed introduction nozzle to form an outer cooling pathway around the feedstock pathway so that the feedstock can be maintained at a temperature effective to minimize or eliminate the formation of oxygenate decomposition byproducts, wherein the cooling pathway is closed-off at an end corresponding to the first end of the nozzle so that cooling medium can flow toward the reactor unit and exit the feed introduction nozzle within the reactor unit through a diluent outlet;

a thermocouple implemented on a surface of the feed introduction nozzle to monitor the temperature of said surface; and

means for modifying the characteristics of the cooling medium flowing through said cooling pathway in response to temperature monitored by said thermocouple.

110. (New) The oxygenate feed vaporization and introduction system for a methanol to olefin (MTO) reactor of claim 109, wherein said material is a non-metallic material selected from the group consisting of ceramics, fire brick, high temperature calcium silicate, alumina and silica-alumina ceramics, diatomaceous silica brick and cements and fillers.